

A list of 73 species collected chiefly on the south-east side of the Gulf of St. Lawrence between Quebec and Gaspé; the species were identified by Dr. J. L. Leconte.

24 D'Urban, W. S. M. A systematic list of Coleoptera found in the vicinity of Montreal. (Can. nat. and geol., 1859, v. 4, p. 307-320: 49+496.)

208 species are listed; some are not fully identified; nearly all were named by Dr. J. L. Leconte; a list of 9 species taken at Sorel but not yet met with near Montreal is appended.

25 D'Urban, W. S. M. Catalogue of animals and plants collected and observed in the valley of the river Rouge and the neighboring townships in the counties of Argenteuil and Ottawa. (Rep. progr. Can. geol. surv., 1858, 1859, p. 226-243.) (Can. nat. and geol., 1860, v. 5, p. 81-86.)

99 determined species of Coleoptera are listed on p. 233-237; several undetermined species are indicated and 34 species from L'Original and Grenville are enumerated on p. 237.

26 D'Urban, W. S. M. Catalogue of Coleoptera collected by George Barnston, Esq., of the Hon. Hudson's Bay Company, in the Hudson's Bay Territories. (Can. nat. and geol., 1860, v. 5, p. 227-229.)

88 species are listed; a few are not fully identified; Dr. J. L. Leconte furnished the list.

27 Dury, Charles. List of the Coleoptera observed in the vicinity of Cincinnati. (Journ. Cinc. soc. nat. hist., 1879, v. 2, p. 162-178.) Separate: 17 p.

1443 species and varieties are listed.

28 Dury, Charles. Coleoptera of the vicinity of Cincinnati. (Journ. Cinc. soc. nat. hist., 1882, v. 5, p. 218-220)

167 species are added to the list.

29 Dury, Charles. Notes on Coleoptera, with additions to the list of the Coleoptera of Cincinnati. (Journ. Cinc. soc. nat. hist., 1884, v. 7, p. 91-92.)

12 species are added.

30 Fay, H. T. On winter collecting. (Proc. ent. soc. Phil., 1862, v. 1, p. 194-198.)

120 species of Coleoptera are listed taken in the vicinity of Columbus, Ohio, during the winter months.

31 Fletcher, James. List of diurnal Lepidoptera and Coleoptera. (Rep. progr. Can. geol. surv., 1887-88, 1889, p. 75 J.)

21 species of Coleoptera taken on the south coast and islands of James Bay are listed.

32 Gardiner, F. Jr. Coleoptera of the White Mountains. (Psyche, 1879, v. 2, p. 211-213.) Separate: 3 p.

89 species are listed with localities and altitudes.

ON THE SPECIFIC DISTINCTNESS OF HALISIDOTA HARRISII, WITH NOTES ON THE PREPARATORY STAGES OF THE SPECIES OF HALISIDOTA INHABITING NEW YORK.

BY HARRISON G. DYAR, YOSEMITE, CAL.

As is well known, two kinds of *Halisidota* larvae inhabit the Atlantic states, differing only in color and in their food plants. Both were noticed by Harris, and the form with black hair pencils was figured by Smith and Abbot as *H. tessellaris*. In 1863, Walsh separated the forms as distinct species, indistinguishable in the imago, and gave the name *H. harrisii** to the form with

orange hair pencils that is found on the sycamore. In Grote's list of 1882, *harrisii* is given as a dimorphic larval variety of *H. tessellaris*, and so it has been considered. However, it seems to be a fact that *harrisii* occurs only on the sycamore and *tessellaris* never on that tree, so that if the former is a variety of the latter, the variation must be due to the influence of the food-plant; but I have recently observed that the larvae differ in their first stage, and it is hardly to be supposed that the food-plant would

*At first he gave the name *antiphola* to the form with black hair pencils, Proc. Bost. soc. nat. hist., IX, 288, but subsequently corrected this. Proc. ent. soc. Phil., III, 413, 430.

influence them before hatching. Moreover, they differ in another important particular, which has not so far been recorded, namely, in the number of larval stages. *Harrisii* has seven stages, with a width of head at maturity of 3.3-3.6 mm., while *tessellaris* has nine stages and a width of head of 4.1-4.3 mm. These measurements were derived from a number of larvae raised in confinement, as well as from some found in nature, and correspond, varying only within the limits indicated.

I have not been able to find any difference in the markings of the imagos bred from these two forms of larvae, but an examination of the male genitalia reveals differences that appear to be constant. In *harrisii*, the side pieces are furnished on the lower side with two tapering, overlapping points, the lower one longer than, and projecting beyond the upper; in *tessellaris* these points are also present, but the upper one is slightly longer than the lower, the two closely overlapping, almost appearing as a single point. The parts seem slighter and more transparent than the corresponding ones in *harrisii*. From the above facts, I conclude that *Halisidota harrisii* Walsh, is a distinct species, entitled to stand as such in our lists.

The fact that it is not to be distinguished from *H. tessellaris* in markings can not militate against this conclusion, as there is no essential reason why two species should differ in markings except that they naturally would do so in most cases, owing to their not intercrossing. We can hardly suppose that the special

markings of a species afford a means of recognition for the individuals of it, except in a general way, as this would imply too nice discrimination in these insects. But that they can discriminate, even in rubbed and faded examples which would be the despair of an entomologist, there can be little doubt, though I can not believe that they do this by the sense of sight alone.

In New York state there are two other species of *Halisidota*, namely *H. caryae* and *H. maculata*, that stand to each other in much the same relation as *H. tessellaris* and *H. harrisii*, but the differentiation seems to have progressed further, so that they are readily separable in the imago state. *H. caryae* has nine stages, as I have already recorded in *Psyche*, while *H. maculata*, has but seven to judge from the last two, which are all I have observed. In the last stage, *caryae* has a width of head of about 4.3 mm., while *maculata* has one of 3.2-3.6 mm.

HALISIDOTA HARRISII Walsh.

Egg. Rounded, obtusely conoidal, the base flat; very shiny pearly greenish white; diameter 0.7 mm. Laid in a mass of about 20 on the under side of a leaf of the food-plant.

First larval stage. Head pale whitish, eyes black, mouth brown; width 0.4 mm. Body whitish, the warts concolorous, each bearing a single blackish hair.

Second stage. As before except that the head is 0.6 mm. wide and the hair is more abundant, several from each wart, longest near the head. It is whitish, mixed with shorter stiff black hairs.

Third stage. Head as before, width 0.9 mm. Body whitish, with a row of blackish subdorsal dashes on the middle segments. Warts

concolorous with the body. Hair whitish, but black and shorter from the warts of row 3 on joints 4, 5 and 12. Longer white hairs overhang the head.

Fourth stage. Head pale whitish, labrum and antennae white, jaws brown, ocelli black; width 1.3 mm. Body and warts whitish with a narrow, broken, black subdorsal line. Hair white with pencils of orange colored hair from the warts of row 2 on joint 4 and of white hair from row 3 on joint 12 besides short black ones from row 3 on joints 4, 5 and 11.

Fifth stage. As before; width of head, 1.7 mm. The pencils of hair are now arranged as follows: mixed orange and white hair from row 2 on joint 3, all orange from row 2 on joint 4, white from 3 on joint 12 and from 4 on joints 3 and 4, only slight on joint 3. Short black hairs from row 3 on joints 4, 5 and 11. Spiracles black ringed.

Sixth stage. Width of head 2.5 mm. Body whitish, a row of black spots surrounding the white spiracles and another subventral row. Hair white, forming a ridge like a keel along the dorsal line. Pencils as in the mature larva.

Seventh stage. Head brownish testaceous, shiny, mouth and antennae white, eyes black, width 3.5 mm. Body sordid white, the warts arranged as in the other genera of the Arc-tiidae except that row 4 is situated stigmatically, posterior to the spiracles and the four ventral warts (row 7) are very small, situated, as usual, on the venter of the apodal segments (the 1st, 2nd, 7th, 8th and 9th abdominal segments). Some irregular black subdorsal marks on joints 2 to 4 partly surrounding the warts of row 3 and some slight marks above the bases of the legs. Spiracles white, in a narrow black border. Hair pale straw color or very pale grayish, keeled on the dorsal line. From warts 2 on joints 3 and 4 a pencil of orange colored hairs; from warts 4 on joint 3 (slightly) and joint 4 and from warts 3 on joint 12 a pencil of white hairs; a few long hairs from the large wart on joint 13.

Cocoon. Composed of hairs and silk, of dense texture, but comparatively smooth, the hairs being laid on flat and not as with *H. caryae*.

Pupa. Thorax and abdomen enlarged, the latter narrowing each way from the middle; abdominal segments appressed, motionless; cremaster represented only by 4 or 5 spiny hairs with their ends enlarged or curled. Body sparsely punctured, cases creased. Color shining dark mahogany. Length 15 mm., width 6.2 mm., height 5.7 mm.

Food-plant. Sycamore (*Acer pseudo-platanus*). Larvae from Ulster county, N. Y.

HALISIDOTA TESSELLARIS Smith and Abbot.

Egg. Not observed.

First stage. Head black, width 0.4 mm. Body whitish shaded with yellow dorsally on joints 3, 4 and 12. Cervical shield warts and anal plate black, each wart bearing a single hair.

Second stage. Head 0.6 mm. wide. Body as before but the hair is more abundant, several growing from each wart.

Third stage. Head black, labrum and antennae white; width 0.9 mm. Body as before, warts of rows 1, 2 and 3 black and a subdorsal blackish line centrally. Hair more abundant, especially at the extremities.

Fourth stage. Head 1.3 mm. wide, colored as before. Body whitish, with large subdorsal orange spots posteriorly on joint 3 and anteriorly on joint 4 and on joint 12. The warts are arranged as in the mature larva, rows 1, 2 and 3 are black, the rest pale. All the warts bear thin short, whitish hairs.

Fifth stage. As before, but the head is 1.7 mm. wide, and from warts 2 on joint 4 grow pencils of black hair, from row 1 on joint 12 the same but the two converge over the dorsum to form a single tuft. White pencils from wart 3 on joint 12. Other hair whitish, longer hairs overhanging the head and posterior extremity. The dorsal region of the body is blackish, the sides pale. Spiracles white, distinct.

Sixth stage. Head shiny black, labrum and antennae white; width 2.1 mm. Body black above, whitish below, the hair gray and the pencils now arranged as in the mature larva.

Seventh stage. Head black, labrum and bases of antennae white; width 2.7 mm. Body black, obscured by the thick hair; abdominal feet whitish; spiracles white. From warts 2 on joints 3 and 4 and from warts 3 on joint 12 grow pencils of long black hair and from warts 4 on joints 3 and 4 and from the large wart on joint 13, thinner pencils of white hair. Other hair even and close, keeled on the dorsum, light drab or dull ochre. Warts gray, except warts 3 on joint 12, which are pale and have orange about their bases. Only traces of the orange marks on joints 3 and 4.

Eighth stage. As before. Head 3.5 mm. wide; body velvety black, the hair on the dorsal ridge appearing somewhat darker than elsewhere.

Ninth stage. Head black and shiny, labrum and antennae white; width 4.3 mm. Body black, marked as in the seventh and eighth stages. Spiracles white. Thoracic feet testaceous; the abdominal, pale. Cervical shield black, bisected. Hair drab or dull ochre yellow, the pencils as before, but now 11 mm. long. The warts are arranged as in *H. harrisii*.

Cocoon. Composed of hairs and silk, of dense texture, but comparatively smooth, the hairs being laid on flat.

Pupa. Like that of *H. harrisii*.

Food plants. Nearly all deciduous trees except the sycamore. The larvae here described in the first stage occurred on beech (*Fagus*).

Larvae from Dutchess county, New York.
HALISIDOTA MACULATA *Harris*.

Sixth stage. As in the following stage except that the hair is less abundant, not obscuring the body. Width of head 2.3 mm.

Seventh stage. Head rounded, smooth shiny black, labrum and bases of antennae

white; a few hairs; width 3.4 mm. Body black, thoracic feet shiny black, the abdominal ones white with black hairs and whitish claspers, their minute hooks brown. Spiracles white. The warts are black, arranged as in the other species of *Halisidota*, namely: row 1 a wart on joints 5-12 inclusive, situated anteriorly; row 2 subdorsal and row 3 lateral on joints 2-13, small on joint 2 and coalesced on joint 13; row 4 posterior to the spiracles; rows 5 and 6 in the subventral space, and row 7 four very small warts on the venter of the legless segments. All the warts bear spreading tufts of yellow feathery hair, brighter in color than that of *H. tessellaris*. From warts 1 on joints 5-12 on the upper side, grow black tufts forming a row of square dorsal tufts as in *H. caryae*, those on joints 5 and 12 a little longer than the others; from row 5 on joints 5 and 11, centrally on the wart, a rather long black tuft; from the upper parts of the warts of rows 3 and 4 grow a few long white hairs, as also from rows 2 and 3 on joints 5 and 11; from rows 2 and 3 on joints 12 and 13 anteriorly a few more white hairs, those on joint 12 have a number of hairs, the one from row 3 on joint 12 forming a decided pencil, though rather thin. Length of white hairs 10 mm.; of larva 30 mm.

Cocoon. Fastened by part of one side, elongate elliptical, much like that of *H. caryae*. It is rather thin, made of silk and hair, the fine larval hairs stuck through, making the cocoon appear something like velvet. Length 21 mm., thickness 10 mm.

Pupa. Thorax and abdomen enlarged centrally with a depression between them; ventral side straight, slightly flattened; ends obtusely rounded; abdominal segments without motion. The cremaster consists of a tuft of spiny hairs. Color, shining dark brown. Length 15 mm.; width 6 mm.

Food plants. Various deciduous trees. The larvae were mostly found on maple (*Acer*).

Larvae from the Catskill Mountains. Ulster county, N. Y.

HALISIDOTA CARYAE *Harris.*

My notes in regard to the number of stages of this species have already appeared in *Psyche*, and, as the latter stages are all essentially alike and the larva is well known and has often been described, I will omit further remarks upon it.

FOOD-PLANTS.—On Sept. 11th I found several larvae of *Papilio turnus* on *Carya glabra*, on which I have not found them before. They were large, bright in color, and nearly full grown, and the leaves near them were much eaten. All were on one tree, and the only other tree very near was a chestnut. I have found them in Brookline, on ash, wild cherry, lilac, maple, tulip-tree, plum; in Vermont on willow; in New York on magnolia.

I found, on the same day, one larva of *Apatela americana* on rose acacia, and one on butternut. I have not found one on maple this year, though I have found many on elm and basswood.

Brookline, Mass.

Caroline G. Soule.

CHOICE OF FOOD. — The larva of *Platysamia ceanothi* differs from all Bombycid larvae I have reared, in always preferring the young tips of twigs, instead of wanting older leaves to eat as they pass the second moult. A brood raised on wild cherry would not eat the older leaves at all, usually stopping with the sixth leaf from the tip of the twig, — these twigs were saplings, not pieces from a tree — and this habit they kept till they spun. *C. promethea* larvae refused the young tips as soon as they had moulted for the second time, and finished up the leaves refused by the *ceanothi*!

Caroline G. Soule.

LITERARY NOTES.—Messrs. Reeve and Co., of London, announce their intended publication, if a sufficient number of subscribers can be obtained, of a work on the indigenous **Heteroptera of Great Britain and Ireland**, by Edward Saunders. It will be

issued in eight parts at five shillings per part, with colored plates, the number of which is not stated.

The American entomological society announces the publication early in October of a **Check list of the Lepidoptera of America**, north of Mexico, by Prof. John B. Smith. The low price of one dollar a copy will bring it within the reach of all.

Seven parts of **Moore's Lepidoptera Indica** have now appeared and it is only in the last that the Euploeinae are completed. This family is divided, as previously by the author, into two groups: the *Limnaeina* of which there are here described 10 genera and 29 species, of which 4 of as many species have illustrations of the larva and pupa; and the *Euploeina* with 16 genera and 50 species, only 4 of which (of 3 genera) have their early stages figured; but let us be thankful; it is the largest collection of illustrations of larval and pupal Euploeinae ever brought together, and certainly justifies some at least of the generic divisions made. In all there are 53 plates given up to Euploeinae, and they contain 225 figures of the imago (every species being figured) and 31 figures of caterpillars and chrysalids. In the seventh part the *Satyrinae* are begun, but only carried as far as the key to the Indian genera.

PROCEEDINGS OF SOCIETIES.

CAMBRIDGE ENTOMOLOGICAL CLUB.

9 May, 1890.—The 154th meeting was held at 156 Brattle St. Mr. J. H. Emerton was chosen chairman.

Mrs. L. J. Livermore was elected to active membership.

Mr. Holmes Hinkley showed a structure found on a violet leaf in his garden. Some discussion followed as to whether it was made by an insect or was a mere fungus growth.

Mr. S. H. Scudder showed a copy of the third volume of De Nicéville's *Butterflies of India*, and read an extract from it on a lycaenid butterfly, the larva of which feeds on the pomegranate. (See *Canad. entom.*, 1890, v. 22, pp. 243-248.)